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CLINICAL EXPERIENCES WITH THE MURIATE OF COCAINE.

BY ADOLF ALT, M. D.

The number of publications on experiences with the muriate of cocaine, the local anæsthetic, is already very numerous, especially in this country. Yet, the fact that the discovery of this remedy is of such an importance that it can safely be put side by side with the discovery of the general anæsthetics, and that, in spite of the numerous reports enthusiastic with the results obtained with this remedy, already a number of writers have tried to belittle its value; seems to me to render it a duty for every one to record his own experiences with this drug.

For my own cases I have used a four per cent. watery solution made by myself from Merck's preparation, and a two per cent. solution I obtained from F. W. Foucar & Co., New York. The latter proved little useful as an anæsthetic and I now use it only as a mydriatic for opthalmoscopic examination. It is different in appearance from my watery four per cent. solution, being decidedly yellow, while the latter is almost colorless, and it also has a most disagreeable pungent odor and irritates the conjunctiva, when instilled. I therefore think it best to rely only on solutions made by myself from the original salt.

Of the latter I am only fully satisfied with the four per cent. solution and never use it in a weaker one for operative purposes. For operations in which the knife or scissors have to penetrate into the deeper tissues, I have insured anæsthesia of

these and the wound already made by the superficial cut, by instilling the solution during the progress of the operation.

In order to render the iris anæsthetic during an iridectomy, I have several times caused the iris to prolapse after the corneal section was made and then dropped the cocaine solution on the prolapsed membrane. After a few minutes I found that the excision was almost painless.

The drug has an undoubted effect upon the nerves of the blood-vessels. This is shown by the loss of elasticity the eye shows, when cocainized, rendering the expulsion of a cataract more difficult (a fact which *Knapp* first mentioned) and by the decidedly reduced bleeding in operations under the anæsthetic influence of cocaine.

The cases in which I have used it are quite numerous, the drug having been in my hand for nearly a month. To relate them all would be a repetition of what others have already published.

I have used it with equal success as an anæsthetic in an operation for trichiasis, in four discissions of the capsule after cataract extraction; in six discissions of the anterior lens-capsule in congenital cataract; in four cases of slitting of the canaliculus and probing of the nasal duct, in two enucleations of tarsal tumors, in one case of iridectomy for glaucoma, in one case of abscision of a prolapse of the iris, in one of tenotomy for strabismus, in one of removal of a large serous cyst from the fornix of the conjunctiva, in several cases of removal of foreign bodies from the cornea, and in one case of cataract-extraction.

I mention all these cases in order to show that the number and variety of cases in which I have made use of the local anæsthesia produced by the muriate of cocaine, is large enough to give some weight to the statement, that this action of the drug is not to be gainsaid.

In a paper read before the St. Louis Medical Society November 8, and which is published in the *Weekly Medical Review*, November 22, I took occasion to mention an experience I had with the drug in a case of iritis, which I consider of great importance, as I am satisfied from it, that the muriate of cocaine

has also a therapeutic effect. I shall relate the case *in extenso* further on.

That the muriate of cocaine has a mydriatic effect is no longer doubted. It dilates the pupil in from ten to fifteen minutes and is thus quicker in its mydriatic action than any of the mydriatics now in use. The mydriasis in a healthy eye disappears in about twelve hours. These two facts, its quickness of action and the early disappearance of the mydriasis, combined with the third fact, that the drug causes only a slight and short paresis of the accommodative apparatus, give it especial value in ophthalmoscopic examinations.

Yet, although the mydriasis, as a rule, disappears much quicker than after the use of atropia, etc., or even homatropia, the action of the drug, while it lasts, seems to be much stronger than the action of other mydriatics. At least, so it appeared to me in a case of discission of a shrunken cataract, which I performed a few days ago. The cataract was so tough that the needle, after having pierced it, was unable to cut it and only shifted it about. During the efforts to cut the lens the aqueous humor escaped, and as it did so, the pupil became fully contracted. I did not make any further attempt to needle this cataract, but at once proceeded to extract a likewise shrunken cataract from the other eye. This accomplished, I found that a very small quantity of aqueous humor had been secreted in the eye first spoken of, and that the pupil was again dilated *ad maximum*. With atropia and other mydriatics my experience has always been that the aqueous humor once lost, mydriasis could only be obtained again by renewed instillations of the mydriatic after the anterior chamber was re-established.

I have, furthermore, been able to dilate a pupil by cocaine and then keep it dilated by atropia, which at first refused to yield to the latter drug. This seems to me to be a further proof, that cocaine has a direct influence upon the nerves of the blood-vessels.

Another observation which I have now made several times and which I stated in the paper referred to, is, that the muriate of cocaine has a decidedly quieting effect on the oscillatory movements in nystagmus of an eye not perfectly blind. This

is an interesting fact and when better studied will have some direct bearing on the pathology of nystagmus, showing that peripheral influences can, at least, have something to do with the production of this disease.

I now proceed to the report of the case of iritis in which, I am satisfied, the muriate of cocaine acted not only as an anæsthetic, but also in a therapeutic way.

On November 1, I extracted, without anæsthesia, a hypermature cataract, with a considerable quantity of deposits of lime from the right eye of Miss E. P., æt. 45. There was nothing remarkable in the operation, nor did the eye show any undue irritation for several days following it.

November 5, 2 P. M. (beginning of fifth day). Eye somewhat irritable, conjunctiva more injected than before. Pupil large from the use of atropia. As I thought the irritation might be due to the atropia, I now used duboisia in its stead. At 8 P. M., nothing changed, except some œdema of upper lid. At 10 P. M., some discharge on cotton. Upper lid and inner canthus œdematous.

November 6, 2 A. M. Patient has suffered intense pain for several hours and is in a state of great anxiety and excitement. Discharge on cotton, both lids swollen, skin shining. Conjunctiva œdematous. Pupil contracted. I had just a day or two before received a small quantity of the muriate of cocaine and I now instilled two drops of the four per cent. solution into this eye. The pain became less after a few minutes, and after having instilled a few drops more the patient went to sleep and did not wake until 6 A. M., that is, for nearly four hours. I left some of the solution at her bedside with the order to instill a drop or two, as soon as the least pain would show. I also left off the bandage.

At 8 A. M., I found her generally comfortable, although the swelling of the lids and surrounding tissue, as well as the chemosis of the conjunctiva, was increased, and there was quite a quantity of that ominous discharge so dreaded after cataract-extraction. There was a quantity of exudation in the anterior chamber, covering the inner half of the iris and pupil, but the outer half of the pupil was dilated. The eye was anæsthetic.

At 2 P. M. the same day *status idem.* Some of the corneal epithelium at the inner half was necrotic and came off. Patient required an instillation of the muriate of cocaine about every two hours in order to be free from pain.

This mode of treatment was continued during the night and for several days, until the first signs of wrinkling could be seen on the outer skin. Now ice applications were added. Duboisia was used besides the muriate of cocaine.

The severity of the iritis was such that I had practically given up the eye, and when after all I saw it subsiding, I told the patient that she would have to wait a considerable time, until the eye would be so far recovered that a secondary operation, which I supposed was to be an iridectomy, could be thought of. But to my great astonishment, œdema, chemosis, exudation in the anterior chamber, irritability of the eye and injection of the conjunctiva, diminished daily and in a manner in which I have never seen it before.

On the 8th of the month the first wrinkle was to be seen on the greatly swollen upper lid and on the 22d, just a fortnight after, I made discission of the capsule and might have done it two or three days sooner. All these days the eye had been kept free from any pain whatever by the use of muriate of cocaine. The freedom from pain and anxiety and the possibility of resting thus procured to the patient, was evidently of an immense value in this case.

This, of course, is only one observation of the kind—yet, if I am not greatly mistaken, the benefit derived from the muriate of cocaine in this case, will be derived from it in other similar cases.

EXPERIENCES WITH HYDROCHLORATE OF COCAINE.

BY DR. W. HUNICKE, OF ST. LOUIS, MO.

It has been my good fortune to obtain a small quantity of cocainum hydrochloricum, with which I have experimented upon the following cases.

Case I.—M. M., æt. 9 years, suffering with conjunctivitis phlyctænulosa. Phlyctænulæ on temporal margin of cornea (left eye). Lachrymation, photophobia and blepharospasm intense. One drop of a four per cent. solution of cocain. hydrochlor. instilled, relieved all symptoms of irritation. Anæsthesia of conjunctiva and cornea produced after 5 minutes, lasting about half an hour, when symptoms of irritation began to reappear.

Case II.—L. S., æt. 13 years. Strabismus convergens, left eye. Two drops, with an intermission of five minutes between each, were instilled into the conjunctival sac. Five minutes after the second instillation, I proceeded to operate. Patient experienced no pain while the incision was made into the conjunctiva, but when the muscle was seized with the strabismus hook, patient grew very uneasy, and when the tendon was severed from the sclera, she screamed violently, complaining of pain.

In this case I believe that the following faults were committed in the application of the drug.

First, that the quantity of cocain. hydrochlor. applied to the conjunctival sac, in order to produce anæsthesia of the deeper parts of the eye, was insufficient.

Second, the drug was not applied gradatim to the parts to be operated upon.

Having gained this experience, I determined to change the mode of application.

In Cases III, IV, V and VI, all cases of strabismus convergens, a four per cent. cocaine. hydrochlor. solution was dropped into the conjunctival sac, just as above. A vertical incision was then made through the conjunctiva, and the patient directed to look outwards. The wound was made to gape by means of a strabismus hook and one drop of cocaine. applied, directly to the scleral insertion of the muscle. The patient was then allowed to close his eye gently and rest for five minutes, after which time the muscle was seized and severed from its insertion, patient feeling no inconvenience or pain during the operation or any time afterwards.

Cases VII—VIII. Foreign bodies extracted from cornea; symptoms of irritation disappearing about five minutes after instillation of cocaine. Foreign bodies were removed without pain.

CASE IX.—Superficial keritits. Conjunctiva hyperæmic, cornea infiltrated in the centre, epithelium shed, photophobia, profuse lachrymation and pain, pupil contracted. Pupil did not react after instillations of atropine (iv. grains to ℥j). One drop of cocaine being applied, the pupil was dilated, in about fifteen minutes, photophobia and pain had disappeared. Atropine was then applied and the pupil continued to be dilated under the influence of this drug.

In all cases where I have used cocaine, I found it to have a mydriatic effect. Using it upon myself, a four per cent. solution produced anæsthesia in about five minutes, and mydriasis and paresis of accommodation in about ten or fifteen minutes. The cornea and conjunctiva would regain their sensitiveness in about thirty minutes, whereas the mydriasis and paresis of accommodation remained for several hours.

I would like to call attention to an observation which I have made, and that is, that in all cases, cocaine produced a change in the appearance of the cornea, the cornea appearing dry, and the reflection from it somewhat diminished. Was this due to my solution of cocaine or does cocaine have an influence upon the secretion?*

NOTES ON SOME OF THE PHYSIOLOGICAL EFFECTS AND PRACTICAL APPLICATIONS OF COCAINE HYDROCHLORATE.

BY JOHN GREEN, M. D., ST. LOUIS.

On the 7th of the present month (November), through the kindness of my friend Dr. Wm. Hunicke, I obtained about two grammes of a four per cent. solution of cocaine hydrochlorate from the laboratory of Merck, of Darmstadt; since that date I have received several additional samples by Merck, and one from F. W. Foucar & Co., of New York; Merck's preparation is in

*This appearance is undoubtedly due to a fatty substance which is seen swimming on the surface of a freshly-made watery solution of the salt. [EDITOR.]

the form of a nearly white powder, soluble in less than twice its own weight of cold water, and forming a nearly colorless solution, of a bitter taste, and of a faint odor, suggesting the aroma of chocolate. Foucar's preparation, which was furnished as a solution, said to be of the strength of four per cent., is of a yellowish tint and of an odor suggestive of dilute alcohol.

Dropped into the conjunctival sack Merck's preparation, in a four per cent. solution, is practically unirritating, causing neither smarting nor redness. Foucar's solution, on the other hand, produces decided smarting of the conjunctiva, and occasionally a slight transient hyperæmia.

With this exception the action of the two preparations appears to be identical, from which I infer that Foucar's solution contains some impurity, such as alcohol, to whose presence the primary smarting and redness are to be attributed. In the present notes I shall, uuless otherwise stated, refer to Merck's preparation only, and in the form of a four per cent. aqueous solution. The quantity used at each instillation has been, as nearly as practicable, one minim.

One minim of cocaine solution, instilled into the conjunctival sack, produces full anæsthesia of the *conjuntiva sleræ* in from four to six minutes, so that this membrane may be seized and lifted by the fixation forceps without giving rise to any other sensation than that of painless pressure or traction upon the eyeball. Anæsthesia of the cornea follows a little later, requiring from eight to ten minutes for its complete establishment. Within the same period the *conjunctiva tarsi* and the lid margins are found to have become insensible to the pressure of the spring speculum, whose presence is borne without giving rise to the slightest reflex contraction of the orbicularis muscle. With the development of the anæsthesia the conjunctiva and sub-conjunctival tissue become distinctly anæmic, and slight grades of hyperæmia disappear. Incisions and dissection of the conjunctiva are attended with less than the usual hæmorrhage, and the print of the fixation forceps is often unmarked by any trace of ecchymosis. This immunity from bleeding is doubtless attributable in part to the absence of reflex muscular contraction, but the anæmia which follows the instillation of

the drug points also to a direct influence upon the vaso-motor nerves. At the end of ten minutes following the instillation, the pupil has generally begun to dilate, in most cases sufficiently to admit of the easy inspection of the interior of the eye with the ophthalmoscope, in the erect image. The dilatation reaches its maximum in about twenty minutes, but it does not ordinarily attain the grade which follows the instillation of any one of the alkaloids of the atropia group; neither is it so complete, for the pupil continues to respond in some degree to changes in illumination. The paresis of accomodation is but slight, and passes off in the course of a few hours, but a slight dilatation of the pupil may often be observed after twenty-four hours. It has appeared to me that the mydriasis becomes more pronounced, and is of longer duration, in cases in which for any reason the instillations have been repeated on several successive days.

The special properties of cocaine hydrochlorate, which have already won for it a unique position among the most valuable therapeutic agents employed in ophthalmic practice, are (*a*) its wonderful local anæsthetic power, which enables us not only to perform many operations absolutely without pain, but also to give immediate and perfect relief in a host of painful conditions attended with photophobia and blepharospasm; (*b*) its marked effect in diminishing the flow of blood in the blood-vessels which lie within the region of its influence, thus rendering many operations comparatively bloodless and pointing the way also to almost unlimited applications in all affections attended with hyperæmia; (*c*) its property of controlling reflex neuroses; and (*d*) its prompt effect in dilating the pupil, with but moderate and transient disturbance of the accommodation, thus ranking it above all other known mydriatics in cases in which it is desired simply to obtain a perfect view of the whole interior of the eye.

In the following notes of special instances in which I have found the employment of cocaine instillations useful, I shall attempt briefly to give results, without entering into any narration of cases in detail.

As a means of facilitating the inspection of irritable eyes in young children, and timid patients generally, the cocaine anæsthesia has proved of the greatest service. A single instillation

suffices, within about five minutes, to overcome the reflex contraction of the orbicularis muscle, aud thus renders it easy to inspect the cornea and the conjunctival sack, and to evert the upper lid. A willful child, will, however, sometimes resist even a painless manipulation of the eyelids, and in such a case the administration of a few drops of chloroform by inhalation may be required in addition to the use of the local anæsthetic.

By means of a single cocaine instillation the pain attending conjunctivitis is controlled, and the otherwise painful application of astringent solutions or of the sulphate of copper crayon is rendered absolutely painless. The general hyperæmia of the eyeball is also materially lessened, with corresponding lessening of the after irritation. In cases of conjunctivitis in which pain and hyperæmia are the predominant symptoms, I have obtained most satisfactory results from the instillation of the cocaine solution alone, using it under my own observation in the morning and allowing the patient to instil a drop on retiring for the night.

A single instillation is generally sufficient to afford relief, within a few minutes, in cases of painful abrasion, phlyctenula or ulcer of the cornea. The attendant photophobia, lachrymation and blepharospasm, as well as the hyperæmia of the eyeball, have either entirely disappeared or have been materially lessened. The good effect of the remedy has generally continued throughout the remainder of the day, and has been still manifest when the patient was seen again after the lapse of twenty-four hours. In milder cases I have been satisfied with using the remedy once a day, but in severer cases I have allowed the patient to have a drop instilled at bedtime also.

In a case of acute exacerbation from exposure to cold, occurring in the course of a chronic conjunctivitis, in which several phlyctenulæ had appeared in the upper segment of the cornea, with commencing formation of pannus, and in which the frequent instillation of a half per cent. atropia solution during two days had failed to produce more than a half dilatation of the pupil, a single instillation of the cocaine solution gave complete relief from pain, and was followed within ten minutes by a dilatation of the pupil nearly *ad maximam*. This prompt and full dila-

tation of the pupil I believe to have been due to the sedative action of the cocaine, permitting the cumulative effect of the repeated instillations of atropia to manifest itself, rather than to the proper mydriatic action of the cocaine, which is neither so rapid in developing nor so complete as in this instance. In this case daily instillations of the cocaine solution have been kept up for about two weeks, with the uniform effect of lessening the pain and hyperæmia, and, in conjunction with the use of atropia, of maintaining more perfect mydriasis than could be secured from the atropia alone.

In two cases of corneal irritation, in which the employment of atropia was prohibited by reason of well-marked atropia conjunctivitis, the cocaine solution has proved a fully satisfactory substitute. All the usual good effects of atropia have been obtained, together with a more than usual effect in quieting pain and lessening hyperæmia.

In iritis I know of no remedy which approaches cocaine in its power of giving prompt and full relief from pain, and it appears to be equally effective in controlling the acute reflex pain which follows exposure to light and the duller nocturnal pain which is generally associated with the recumbent position. It appears also, through its direct action upon the blood-vessels, to exert an important influence in limiting the extent and the activity of the inflammation. It is especially efficient as an adjuvant to atropia in promptly establishing and maintaining full mydriasis, and it has also rendered good service in effecting the rupture of adhesions which had resisted the mydriatic action of atropia.

In two cases of nystagmus I have had occasion to avail myself of cocaine mydriasis to facilitate ophthalmoscopic examination. In one of the cases, a young adult with congenital nystagmus, no effect was observed beyond the usual dilatation of the pupils. In the second case, however, a nearly albinotic girl of eight years, I was able to verify a recent, and so far as I know, original observation of Alt, namely, that under the influence of the cocaine instillation the oscillations of the eyeball have been for the time restrained both in frequency and in extent. Before instilling the solution I could only catch momentary glimpses of

the details of the fundus in the inverted image, whereas, twenty minutes after the instillation I was able to make a satisfactory ophthalmoscopic measurement of the refraction, — O.D. M. = 5.5 d.; O.S. M. = 1.5 d.; in the horizontal meridian. These measurements were several times repeated under cocaine on successive days and were subsequently verified by subjective tests with trial glasses. The child is now wearing correcting glasses, O.D.—5.5 d. sph. —1.5 d. cyl. Ax. horizontal, O.S.—1.5 d. sph.—1.5 d. cyl. Ax. horizontal. In this case the effect of the drug in controlling the nystagmus appears to continue in some degree for more than twenty-four hours, and it seems not unreasonable to hope for some permanent amelioration as a result of its continued use. In a third case of nystagmus, in a girl of six years, complicated in both eyes with zonular and pyramidal cataract and irideremia, the oscillatory movements of the eyeballs are controlled to an extent to admit of a good ophthalmoscopic measurement of the refraction (H. = 5. d.) through the transparent peripheral portion of each lens.

The local anæsthesia which is obtained from one, two, or at most, three instillations of the cocaine solution into the conjunctival sack has proved entirely sufficient to admit of the painless performance of all operations limited to the conjunctiva and cornea. In operations involving the deeper tissues, as in certain operations for pterygium in which deep sutures are employed and in the operation for strabismus, it is generally necessary to instil a little of the solution into the wound, after which the deep sutures may be placed, or the tendon raised and divided, without pain. In iridectomy the seizure and abscision of the iris are painful, but the sensibility of a prolapsed portion of iris may be annulled within a minute or two by dropping upon it a very minute quantity of the solution. The discision and simple linear extraction of soft cataract are painless, and the same is true of the discision of membranes obstructing the pupil in aphakial eyes, provided that no traction is made upon the iris or the ciliary attachments of the membrane. The extraction of cataract is also painless, with the exception of the iridectomy, and this, too, may be rendered painless by producing

an artificial prolapse of the iris and applying a little of the solution to the prolapsed portion. But regarding the safety of this procedure, the occurrence of suppuration in the single case in which I have praeticed it compels me, for the present, to suspend judgment. In the removal of foreign bodies imbedded in the cornea, a single cocaine instillation suffices to render the cornea entirely insensible in the course of from five to eight minutes, and two instillations have, within ten minutes, produced a degree of anæsthesia sufficient to admit of the somewhat protracted picking and scraping required for the removal of an old and firmly adherent lead deposit. In one case a little pain was felt toward the end of the operation, but the sensibility was promptly controlled by another application to the denuded corneal tissue. In all cases of operations performed under cocaine anæsthesia the after-reaction and pain have been remarkably slight, and frequently altogether absent.

The operation of probing and slitting the lachrymal punctum and canaliculus is greatly facilitated, and is rendered wholly painless, by the instillation of a drop of the solution at the inner canthus, and the dilatation of a stricture of the nasal duct can generally be accomplished without pain by previously injecting a single drop into the lachrymal sack. The anæsthesia may then extend even into the nostril, provided that the way is sufficiently free to admit of the passage of the solution.

In canthoplasty the painful part of the operation is materially abridged by a single instillation at the outer canthus; the insertion of the blade of the scissors into the conjunctival sack and the placing of the sutures are painless.

Incisions in the tarsal tissue upon its conjunctival aspect are rendered painless so far as concerns the conjunctival layer, and a softening chalazion may be laid open with little or no pain. If it is desired to stir up and scrape out the softened tissue of the tumor, it may be almost painlessly accomplished by first injecting a little of the solution into its substance.

In conclusion, it may perhaps be permissible to record my belief that in cocaine hydrochlorate ophthalmic practice has been enriched by a therapeutic agent of the first order.

A CLINICAL REPORT ON SOME USES OF MURIATE OF COCAINE IN OPHTHALMIC PRACTICE.

BY DR. S. C. AYRES, CINCINNATI.

The new corneal anesthetic has set the ophthalmic world on fire, and contributions are pouring in on all hands indicating its valuable qualities. Its appropriation to ophthalmic uses marks a new era in our practice. It may be compared to the discovery of anaesthesia by means of ether, but it will not take it so long to get into general use, for this is a progressive age and the new things are now very quickly taken up and weighed in the balance, and if found wanting as quickly thrown aside. This new remedy promises a wide field of usefulness, not only in ophthalmology, but in special and general surgery. Experiments so far only go to confirm the first favorable impressions made of it.

The following clinical observations are given for what they are worth at this early day in the use of this new alkaloid. I can speak in the most satisfactory terms of its valuable effects so far as I have been able to test them.

CASE OF BULLOUS KERATITIS.

Miss F. has been suffering for several months with her left eye. There is a large central opacity of the cornea and over this the epithelium is raised in bleb-like manner. By pressing the lower lid on the cornea the fluid underneath the epithelium can be moved upward or to either side. There is great photophobia at all times and unusual lachrymation when the eye is examined. I determined to remove the epithelium, but before doing so was desirous of producing full analgesia with cocaine if such a thing was possible. A few weeks ago I had under treatment a nearly similar case except that it followed an incised wound of the cornea. The epithelium was removed four times and the cornea cauterized with carbolic acid. The first operation was done without an anæsthetic and he suffered exquisitely during the operation and for several hours afterwards. The subsequent operations were done under chloroform. With this recent experience I was desirous of relieving my patient of pain if the

then new and untried remedy could accomplish it. I instilled two or three drops of a five per cent. solution and had her close her eye. In ten minutes it was repeated and five minutes later a third instillation. The cornea was now quite insensible to the touch as were the ocular and palpebral conjunctiva. With a pair of fine forceps I tore the epithelium off without causing any discomfort. With a spud I scraped the central portion of the cornea, which was softened and broken down. I then applied an almost saturated solution of carbolic acid to the cornea on a line marking the boundary of the bleb. During all this there was scarcely any pain and very little lachrymation. A week later the epithelium having been reproduced I began its removal without the previous use of cocaine. She suffered quite severely and the eye wept very profusely and she had but little control of its movements. I then used the cocaine and completed the operation under its use with the same results I had the first time.

IN GRANULAR CONJUNCTIVITIS WITH GREAT PHOTOPHOBIA.

In one very bad case the cocaine had a remarkably quieting influence on the eye. In a few minutes after its use he was able to open his eye with a considerable degree of comfort and the lachrymation was markedly diminished. I had been using atropine but it did not seem to have much influence on the pupil. After getting the full influence of the cocaine his pupil was widely dilated and remained so. Whether it was from the combined influence of atropine and cocaine or the controlling influence of the latter which allowed the atropine to act is yet to be determined.

CASE OF HYPOPION KERATITIS.

Pat M., æt. 62, has extensive ulceration of the left cornea with hypopion. The eye has been extremely painful for two weeks, during which time I made a paracentesis of the cornea twice. Each operation was followed by unusual pain, which lasted several hours. The solution of cocaine (5 per cent.) was instilled twice at intervals of ten minutes. Five minutes after the second instillation he was examined to find what influence it had had on the cornea. I could touch any part of the cornea, including the ulcerated portion, with a probe without giving him any pain or discomfort. There was no lachrymation or

spasm of the orbicularis. When the conjunctiva was seized with the fixation forceps he made no resistance. The puncture was made through the floor of the ulcer and aqueous and pus evacuated. Some pain followed but it lasted only a few minutes, and he soon got up and left the office. This was quite in contrast with his actions after the previous operations, for after them he was compelled to lie quietly for nearly an hour.

FOREIGN BODIES ON THE CORNEA.

In these painful accidents we are likely to have a most valuable aid in the new local anesthetic. To be able to remove them easily, quickly and with little pain is a great desideratum. It can certainly be accomplished in the most satisfactory manner under the influence of cocaine. As the comparison between the removal of a foreign body from the same individual with and without the anæsthetic affords the best testimony, I select one from a number:

Mr. B. has been suffering all night from a foreign body imbedded in the cornea. I used a drop of the five per cent. solution and had him wait ten minutes with his eyes closed. I then proceeded to remove the offending substance, which was done with so little pain that he declared it was not worth considering when compared with a similar experience he had had a few months previously.

In the treatment of such cases among children and nervous persons who have but little self control the new agent is destined to prove a boon to both patient and operator.

CENTRAL SUPERFICIAL NECROSIS OF THE CORNEA.

Nellie M., æt. 12, has had a chronic inflammation of the cornea, dating back about eight months. The central portion of the corneal epithelium is opaque, roughened and irregular. The inflammation has been of an indolent character for months past, and while it has fluctuated from bad to worse, there has been no real progress made towards improvement. I decided to scrape the dead tissue off and did so, but she experienced very acute pain. In the course of two weeks there was marked improvement and the area of the necrosed tissue was considerably

lessened, but it was deemed advisable to again scrape the cornea. This time I made two instillations of a solution of cocaine before the operation. She experienced some pain but she could endure it very well and said it was very slight as compared with what she had suffered two weeks before.

DOUBLE IRIDECTOMY PRELIMINARY TO CATARACT EXTRACTION.

Mr. M., æt. 48, has semi-mature cataracts and it was decided to make preliminary iridectomy. The solution of cocaine was instilled twice at intervals of ten minutes, and five minutes after the second instillation the operation was performed. The introduction of the speculum caused but little discomfort and there was no lachrymation or spasm of the orbicularis. Fixing the eye was scarcely felt, and the incision caused but little pain. The excision of the iris caused some pain, but it was apparently much less than usual. It is at present supposed that cocaine has but little if any influence on the iris, but further experiments are required to determine the scope of its effects.

STRABISMUS CONVERGENS.

Mary H., æt. 12, has alternating strabismus convergens. Vision is nearly perfect in both eyes. She is ambitious to have her eyes straightened, and will have it done without ether. A four per cent. solution of muriate of cocaine was instilled and in fifteen minutes it was repeated. In five minutes after the second instillation it was again repeated. Five minutes later I tested her accommodation, and found it perfect, although her pupils were widely dilated. I then proceeded with the operation. The spring speculum caused no irritation, and there was no lachrymation. The ordinary subconjunctival operation was done, and not a drop of blood was lost. She had perfect control of her eye and turned it outward when told to do so. I expected her to experience pain when the muscle was severed, but she did not, and when it was all completed I asked her if it was painful and she answered, "no, not a bit." It was remarkable to have a child of her age, go through the operation which is

ordinarily so painful, and to express herself so emphatically in favor of the anæsthetic properties of the cocaine.

CHALAZION MULTIPLE.

Mr. R., æt. 45, chalazion multiple, two in right upper and one in left upper lid. The inner one in the right lid is acutely inflamed and the eyelid is very sensitive. It was with great difficulty that I could evert the lids, and the spasm of the orbicularis was so great that I could only hold them everted a moment. I managed to apply the four per cent. solution of cocaine to the inner surface of the upper lids and then had him close them for ten minutes when I reapplied it. Seven minutes later I made a third application and also brushed the lids over the tumors with the solution.

In five minutes I proceeded to puncture the tumors and remove their contents with a spoon. I could now evert the lids without difficulty, the spasm of the orbicularis being apparently under control. I punctured the tumors and removed their contents, but it was not entirely without pain, but his suffering was not nearly as great as it generally is in similar cases.

EXTRACTION OF LENS FROM THE ANTERIOR CHAMBER.

Mr. P. The left lens is in the anterior chamber and exerting considerable pressure and for fear it should again drop back into the vitreous I determined to extract at once.

A four per cent. solution of cocaine was used three times before the operation. The introduction of the spring speculum caused no lachrymation nor spasm of the orbicularis. The incision in the cornea was made below and the lens extracted without accident. When asked if the incision in the cornea caused any pain he said "No, I did not feel it but *heard* it." Two years ago I extracted the right lens which had fallen forward into the anterior chamber by a similar operation. He had this experience to compare the latter operation with and expressed himself highly gratified with effects of the cocaine.

TWO CASES OF ORBITAL TUMORS.

BY JOSEPH AUB, M. D., CINCINNATI.

MICROSCOPICAL EXAMINATION BY ADOLF ALT, M. D.

CASE. I. In July, 1879, I was called to see Mrs. McEl—, who had been suffering with exophthalmus for some time, but became seriously alarmed when, after stooping over some work she found her eye completely forced out of the orbit. On examination I found the eyeball protruded to such an extent that the lids had closed in behind the eyeball. With considerable difficulty, I released the lids from their position so that they could again at least partially cover the globe. Patient stated that two years previous to my first visit and without any assignable cause the left eye commenced to protrude and sight gradually to fade. She has never had much pain in or around the eye, but since the first appearance of trouble in the eye has had but eight or ten attacks of severe pain in the head, some often lasting more than two hours. During these attacks she would feel dizzy and have a throbbing sensation in the eye. Sight has been altogether lost since one year.

St. pr. Eyeball protruding fully seven lines and directed downwards and outwards. Motion upward entirely wanting. On bending forwards the protrusion is not increased. Eyeball covered with large veins. Cornea, anterior chamber, lens and vitreous clear. Optic disc is hyperæmic and its margins obliterated. No swelling of disc; veins are much enlarged and tortuous. Nothing can be felt on the orbital wal's above, obstructing the movements upwards, although motion in that direction is entirely wanting. On passing the finger behind the eye, the optic nerve can be distinctly felt as it passes into the globe and passing back from that an oval-shaped swelling, filling the inner and lower portion of the orbital cavity and extending backwards to the apex of the orbit can be distinctly outlined. The surface of this

tumor is irregular but not ragged, hard to touch and evidently surrounds the optic nerve. Near the entrance of the optic nerve at the eyeball it is constricted to the size of the nerve and seems to be embraced within the optic nerve sheaths. The eyeball is of normal tension and projects so much as to allow one to feel distinctly the optic nerve and the attachments of the oblique muscles. Pressure upon the eyeball does not reduce the exophthalmus. Auscultation reveals increased bruit, but no pulsation in the orbit.

Patient's health had been otherwise perfectly good. Three weeks previous to my visit she had given birth to a healthy child and has plenty of nourishment. The eye symptoms have not been aggravated by the child-bed.

The diagnosis of an orbital tumor was made and enucleation was advised. The next morning assisted by Dr. O. E. Davis, the family physician, the patient was placed under the influence of an anæsthetic and the eyeball denuded of conjunctiva, the tendons of all the muscles cut close to the sclerotic. With the finger passed backwards between the globe and enveloping sheaths, I was enabled to dissect the tumor free from the surrounding orbital tissues down to the apex. With a long scissors curved on the flat I was then enabled to cut the optic nerve close to its entrance into the orbit. The entire tumor and eyeball were thus removed in one mass. Nothing unusual occurred, either during the operation or the healing. Patient was up on the third day and had an artificial eye inserted at the end of three weeks.

MACROSCOPICAL EXAMINATION.

Eyeball apparently normal. Close behind its entrance into the eyeball the optic nerve begins to swell and assumes the shape of a spindle, the posterior end of which evidently lay farther back in the orbit, or the canalis opticus, than where it was cut when being removed.

A longitudinal section through eyeball and nerve shows the greatest thickness of the hardened tumor to be about three-fifths of an inch. This includes the sheaths of the optic nerve which are enormously thickened. Near the center of the tumor

it contains a large irregular space filled with a gelatinous material.

The optic nerve at its entrance into the eyeball seems very small, the papilla optica appears normal.

The conditions of the eyeball are of no importance.

MICROSCOPICAL EXAMINATION.

The tumor consists chiefly of spindle-shaped and stellated cells. In the center of the tumor these cells are so closely pressed that the tissue has the appearance of a tough fibrous tissue; towards the periphery they are loosely packed and a hyaline intercellular substance is found. These cells are frequently arranged concentrically and form nests somewhat resembling pearl-nodules. This arrangement of the cells seems to be especially frequent around small blood-vessels, which are very numerous throughout the whole of the tumor. Between the myxoma-cells a large number of small round cells and free nuclei are lying. In many parts of the growth the mucoid substance is accumulated in the form of smaller and larger cysts of irregular or round shape.

Closely connected with the tumor of the nerve proper is the enormously swollen pia mater sheath. Its fibres are also pervaded by innumerable cells of the same character as those of the tumor. The dura mater sheath is but slightly swollen and contains no cells of the tumor.

The optic papilla, which macroscopically appeared normal, shows a distinct atrophic excavation. The tumor had bent the nerve close to its entrance and thus the outer sheath of the nerve on one side lies in contact with the sclerotic. In consequence the fibres of the lamina cribrosa are shifted towards the opposite side and run obliquely. The nerve fibres are nearly perfectly gone in this region. Behind the lamina cribrosa, however, the optic nerve seems normal for a small distance; there is especially no hypertrophy of its connective tissue trabecules.

Further back the connective tissue and then the nervous tissue are filled more and more with nuclei and spindle-shaped cells which increase in number, until it is impossible to recognize anything of the normal structure of the optic nerve.

The central retinal blood-vessels contain blood. The retina appears unaltered with the exception of the region of the optic papilla, where the nerve-fibre layer has almost totally disappeared.

MICROSCOPICAL DIAGNOSIS.

Myxosarcoma nervi optici.

CASE II.—Miss Minerva St. of Roane county, W. Va., called to see me in April 1884, and gave the following history of her case: Two years ago whilst walking, she stumbled accidentally, falling with great force, and striking the upper orbital margin. The eye was swollen for a few days following this accident. Since that time the eye was gradually displaced downwards and projected outwards. Sight became slowly dimmer. The eye was painful from exposure, the lids not covering it entirely. At no time has there been any inflammation of the eyeball nor any pulsation in the eye or behind it. Patient is a small petite figure, but has always enjoyed good health.

On examination I found the eye pushed downwards and outwards and protruding to the extent of 4‴. This exophthalmus was not increased when patient would stoop over a while. Movements good in all directions except upwards, the eye being brought only to the horizontal plane. In the median position the left eye was about 6‴ lower than the right one. Sight was reduced to counting fingers at 6 feet. Visual field good. The refracting media were clear. Ophthalmoscope showed the optic disc very hyperæmic, veins very tortuous, and both veins and arteries swollen. The upper lid hung over the eyeball, and could be raised only with great difficulty. From the centre of the supraorbital ridge is a hard bone-like projection extending downwards under the upper lid and reaching from the supraorbital notch to the outer canthus. This projection does not involve the orbital margin from which it is distinctly separated; it is irregularly formed but smooth on the surface. At the inner margin it can be felt to extend backwards into the orbit to some extent. On pressure decided crepitation is noticed, and the growth seems to yield very slightly on pressure from all directions. No bruit and no

pulsation in the growth. The surface of the growth itself was very hard to the touch.

From the history of the growth and the accident preceding its development, I supposed that the supra-orbital plate of the frontal bone had been fractured and the tumor developed in consequence thereof. I was confirmed in my opinion by the crepitation and also by the fact that the tumor although yielding somewhat in its entirety to pressure, did not show any spot which would indicate a softness. The entire growth was of a bony hardness. Its smooth surface and hardness, its location near the frontal sinus, the favorite seat of osteoid growths, and its slow development led us to the diagnosis of an osteoma. In this I was confirmed by Dr. S. C. Ayres, who was called in consultation. It was determined to remove the growth, which was felt to extend backwards into the orbit and almost to the apex. The tumor was supposed to have caused paralysis of the superior rectus and the levator palpebræ by pressure, but not to have involved these muscles in the growth. If possible, the eyeball was to be preserved as an organ of vision. The patient was given a tonic of iron and bark and told to continue its use for four weeks, when she should return for the operation.

Patient returned on May 17, in unusual good health, and on that day the operation was performed, Drs. S. C. Ayres and A. B. Thrasher assisting. An incision was made through the upper lid from the supra-orbital notch to the outer canthus, parallel to and a little below the orbital margin. When the surface of the tumor was reached, the soft parts were held apart and I proceeded to divide the adhesions of the tumor to the upper orbital walls. In doing this I found that I was also able to cut into the tumor which, instead of being of bony hardness, appeared now to be cartilaginous. After some difficulty, I detached sufficient of the coverings of the growth, to enable me to pass my finger along the growth backwards, and obtaining a purchase in this way I turned the growth out of the orbit without further cutting. The cavity was found to be perfectly smooth but extended backwards to the apex of the orbit. After thorough cleansing, a small drainage tube was passed back to the apex of the orbit, one end of which was allowed to project at the outer, and the other end

from the inner angle of the incision. The intervening space was closed with sutures. A compress bandage was applied. Patient received one-fourth grain morph. sulph.

May 18. Patient rested well. No pain. Pulse 96. Temperature 99½. Only a slight œdema of upper lid On lifting the lid the eyeball was found to have been pushed back into the orbit and considerably elevated. Motion except upwards was good. Sight was materially improved.

May 18. Patient has had no pain, nor trouble of any kind. The drainage was removed, and new tube introduced. Cavity has been washed daily with a boracic acid solution. No secretion. Sutures removed.

May 24. Drainage tube removed altogether. Cavity filling up. No fever, pulse 90. Appetite good. Patient is up all day and feels well. Ptosis is less marked, the lid at its inner portion being slightly raised. Exophthalmus entirely reduced. Motion upwards wanting altogether. Patient can recognize small objects at a distance of 100 feet and can tell time on a small-sized ladies' watch with ease.

May 27. Wound entirely closed. No swelling. Some tenderness on deep pressure. Motion as before. Ophthalmoscope shows the fundus in better condition, hyperæmia of disc reduced and veins and arteries almost normal in size. Patient reads small newspaper print with ease. Discharged.

The tumor at the time of its removal was 4 cm. long and 22 mm. wide. Its longitudinal circumference was 9 cm., whilst at its widest point the circumference was 7 cm. Its weight was not taken. After hardening in Mueller's fluid it was sent to Dr. Alt for microscopical examination. From its location and the developments during the operation, we found that we had erred as to the diagnosis of osteoma and have come to the conclusion that the tumor was developed from the lachrymal gland, involving the entire gland in the process.

MACROSCOPICAL EXAMINATION.

The specimen sent to me is probably half of the tumor removed by Dr. Aub. On its cut surface it is about three times as long as it is broad. Its uncut surface is nodular and irregu-

lar in shape. The tumor has apparently been lying within a dense fibrous capsule, which is as yet adhering to it in several parts. The cut surface shows a large number of islets of translucent tissue, probably cartilage tissue, which appear to be divided from each other by tougher bands of a darker hue. The tumor is hard, but elastic.

From the history of the case given by Dr. Aub and its macroscopical appearance, which tallies with that of other specimens from the same region I have had occasion to examine, my diagnosis was at once that I had to deal with a tumor of the lachrymal gland and that it was enchondromatous in character.

MICROSCOPICAL EXAMINATION.

In fine sections the tumor shows a somewhat different character, namely, it is a mixed tumor.

The fact that we have to deal with a tumor of the lachrymal gland is evident by a number of perfectly normal glandular structures characteristic of that organ. Here the epithelial cells are yet normally arranged and the lumen of each cell-cylinder is preserved. In other parts the cell-cylinder has partially lost its lumen and what remains of the latter is dilated and filled with a gelatinous mass of a strange yellow color, which, however, can hardly be anything else but the condensed secretion of the glandular cells.

In other parts there are perfectly solid epithelial cell-cylinders without the well and regularly arranged peripheral layer of cylindrical epithelial cells. These cylinders consist of epithelial cells, which in their growth have pressed each other and thus attained all sorts of shapes.

The bulk of the tumor is made up of a transparent hyaline matrix. In this are embedded cartilage cells in large quantities. These cells are in parts, so numerous as to give the tissue the appearance of embryonic cartilage, whilst in others, evidently of longer existence, the matrix is comparatively prevalent. In some parts of the tumor these cells are evidently undergoing a myxomatous metamorphosis, and there are, indeed, large nests of myxoma cells. In other parts of the tumor there are considerable quantities of fibrous tissue and more especially in those

parts where the glandular elements are as yet well preserved. These are probably the remains of the interstitial and interlobular connective tissue. Yet, in some places these fibres are interspersed with cartilage cells to such a degree as to give the structure the character of fibro-cartilage, as we find it in the auricle.

The tumor, as far as examined by me, contains but very few capillary blood-vessels in its outer portions. The fibrous capsule which evidently enclosed the tumor was the capsule of the lachrymal gland.

MICROSCOPICAL DIAGNOSIS.

Enchondroma myxomatodes carcinomatodes glandulæ lachrymalis.

THE USE OF CARBOLIC ACID IN PURULENT AFFECTIONS OF THE CONJUNCTIVA AND CORNEA.[1]

BY G. HERBERT BURNHAM, M. B.
Trin. University, Toronto, F. R. C. S. E., M. R. C. S. Eng., Late Resident Surgeon to Moorefield's Eye Hospital, London.
Toronto, Canada.

A few years ago when Resident Surgeon to the Moorefield's Eye Hospital, London, I introduced into ocular practice the use of the 5 per cent. lotion of carbolic acid in gonorrhœal ophthalmia. Previous to this I had tried every variety of treatment then recommended with a success not very encouraging.

The deep transparent excavations of the cornea so frequent in this affection so often followed by perforation and prolapse of

1. A part of this paper was read before the Ontario Medical Association at Hamilton.

the iris, or deeply infiltrated ulcers which, through leaking in their floor, give rise to falling forwards and adhesion of the iris to the posterior surface of the cornea not again to be loosened; or other cases in which the ulceration rapidly involved the whole cornea, causing destruction of vision, and at times of the eye itself—all these terminations have I at different times witnessed and seemed powerless to prevent. If the changes did not go so far still I have been kept on the wings of expectation, not knowing, with the arsenal of remedies then at my command, what the outcome might be. These are a few of the considerations which made me anxious to get a better and more reliable remedy. Now, after a considerable lapse of time, I feel that I have secured the desired remedial measure in carbolic acid. I have tested its merits in all the various forms of gonorrhœal ophthalmia, for instance, in that with much serous chemosis and swelling of the ocular and palpebral conjunctivæ; in that where the œdema is as great, but harder and denser; in that where the conjunctivæ of eyeball and eyelids and the sub-conjunctival tissue, are so fully loaded with exudation as to give the brawny, mottled look of diphtheritic ophthalmia. In fact, quite lately, I had a case, that of a young man, in whom the inflammation was the most violent I had ever witnessed. The partly everted lids had the mottled, white and red look with inability to remove any of the infiltrations so characteristic of diphtheritic ophthalmia. When the tissues began to unload themselves, quite large pieces came away leaving excavated and bleeding surfaces. I value the treatment by carbolic acid so much above all the other varieties that I have ever employed, that I now use no other. Under its influence, the transparent excavations quickly heal, and, moreover, have never, since I began its use, progressed to perforation, as formerly so often the case. The same may be said with respect to the other forms of corneal ulceration brought to our notice in gonorrhœal ophthalmia.

I, however, met with one form of corneal mischief, which I do dread, and against which I am not as well provided, as I could wish. This form is the deep, circumscribed infiltration of the cornea with the external surface unabraded. Here the mor-

bid process goes on extending inwards till hypopyon comes. After this the external surface ulcerates, and then the part is so weak, that at once perforation of the cornea and entanglement of the iris, more or less complete, take place. The powerlessness of carbolic acid in this variety is due to its inability to reach the seat of mischief.

The consequences in these cases being such as I have mentioned, have determined me to do *Saemisch's* operation when the opportunity is given me, and by so doing bring the abscess under the benign influence of this acid. This action I shall take though well aware of the great danger of incising the cornea in the midst of such a fierce purulent discharge.

As is well-known in the worst forms of gonorrhœal ophthalmia the lids are so swollen and stiff, that only very partial or no eversion can be made. This prevents the proper application of other forms of treatment, such as strong solutions of nitrate of silver, the mitigated and pure stick. The carbolic acid lotion travels with great ease beneath the lids, and hunts out as it were all the obscure places. The way in which to make such a thorough application, can after a short time, be taught any moderately skillful nurse. These last truths I consider of great moment, and factors telling much in its favor.

The course pursued in the treatment of a case of gonorrhœal ophthalmia is as follows: The patient is ordered to bed; then there is placed at his bedside a large basin of cold water in which there is always kept a big piece of ice. The eye is to be bathed by the patient, or by the nurse, very frequently so as well to cleanse the eye. In the intervals clothes wet in the iced water are constantly to lie upon the closed eyelids. The lotion of a strength 1 in 20, is to be thoroughly applied *every hour*, the lids being as well everted as possible. I always apply the lotion very freely, and at the same time tell the patient to move the eyeball about, so as to give the lotion as free access as possible. These applications are to be made day and night. In consequence of this a nurse must be in constant attendance. The pain and smarting, which ensue after using the carbolic acid, last but a few seconds, and are succeeded by a feeling of comfort and relief. This is another point in its favor.

and in direct contrast to the effects of the powerful caustics heretofore employed. As the discharge becomes thinner and more laudable, the 5 per cent. lotion is to be used every second hour, and during the intervening hour, the 2½ per cent., or 1 in 40, is to be applied. As the virulence of the affection goes on diminishing, the 1 in 40 may be used altogether. I do not employ the watch glass protector, the ingenious contrivance of Dr. Buller, of Montreal, for the sound eye. I tell the patient to lie on the side on which the affected eye is, and warn him of the danger of inoculation. I consider these measures to be sufficient precautions, when using so frequently an application of such strong antiseptic properties.

I look upon this lotion, as the most effective and reliable remedy, we have at our command in gonorrhœal ophthalmia; and the more I make use of it, the greater becomes my faith in its power for good. The great *antiseptic* and *astringent* properties of carbolic acid place it in my opinion without a rival in the treatment of this inflammation.

This is its history in my hands with regard to the foregoing affection. I shall now mention it with respect to other purulent affections, especially where the cornea is markedly implicated. One of the most dreaded sequels to a cataract extraction is purulent infiltration of the corneal wound. When this infiltration of the cornea has made its way to *Descemet's* membrane, and is also spreading in other directions in the corneal substance, and is associated with free purulent discharge, there is a feeling in the mind of the operator that the eye is as good as lost. It is in just such cases that I have more than once been completely successful, and have secured an unimpaired eye. I well recollect one case, that of an old and feeble man, an inmate of Moorefield's Eye Hospital, in whose eye on the third day after the operation, when union had taken place, infiltration of the wound set in. This under the usual mode of treatment in such cases got worse and worse. The infiltration alarmingly increased in depth and width, and the discharge became markedly purulent and copious. It was quite evident that improvement must quickly take place, or the eye would be lost. I now vigorously applied the 5 per cent. carbolic acid lotion. The result was that in two days the eye was

out of all danger. Then, on examining the wound, there was to be seen a deep, broad excavation reaching to *Descemet's* membrane, with a ragged but healthy surface. The surrounding cornea was bright and clear. This excavation gradually filled up, and the patient went out with a good, serviceable eye.

In those cases of kerato-iritis, where the corneal ulceration is extensive, this lotion has been used with most beneficial results. Here it is combined with the usual treatment of atropine, warm bathing and constitutional remedies.

I have based all my remarks upon those cases in which the corneal inflammation was extensive, and associated with more or less purulent discharge; and where a new departure in treatment would show its usefulness, and enable a just conclusion to be drawn, in other words in test cases.

If I think a weaker lotion than the 5 per cent. will answer the purpose, I may not at any time use the 5 per cent.

I feel that I am fully justified in strongly recommending the carbolic acid lotion in the various and kindred affections laid before you; for it has so often come out victorious in real test cases, and where previously non-success had too often been my lot.

It is very necessary to use the *pure* carbolic acid, as any impurities give rise to such irritation and sometimes pain, as not only seriously to interfere with its full and proper application, but also materially to lessen its curative properties.

A CASE OF SYMPATHETIC IRRITATION OF RIGHT EYE, CAUSED BY OSSIFICATION OF CILIARY BODY AND ANTERIOR PART OF CHOROID OF THE LEFT EYE.

BY GEO W. SMITH, M. D., FORT SMITH, ARK., UNITED STATES EX-SURGEON.

L. R. E., 48 years, rheumatoid affection of large joints and hypertrophy with dilatation of the heart, consulted me in the winter of 1880.

History—Received an injury to left eye in 1862 from piece of percussion cap while target shooting; the cornea was penetrated on the temporal side and healed, giving him no trouble, and as he states, sight remained good for eighteen months. He contracted a severe catarrh, from which his left eye became inflamed and the sight destroyed.

He has more or less pain in the stump, radiating to the frontal, temporal and occipital regions since the catarrhal attack, and was treated for *neuralgia* by several physicians. After examining him, I advised immediate enucleation, for the following reasons: The left eye or stump was painful, and sight destroyed. Also the right eye was irritated, there was photophobia and lachrymation and weak accommodation He declined to have the operation performed and returned to his physician, who had the hardihood to deny the existence of such a condition as sympathetic irritation, and advised him to hold on to the stump, being better than an artificial eye. In August 1884 he again consulted me; he was much reduced in health with constant pain in the stump, also frontal, temporal and occipital regions; his former condition intensified. I stated to him that enucleation was the only remedy, to which he consented, and on the morning of Aug. 18, 1884, under chloroform administered by Dr. Leo Bennett, the stump was removed. On examination of the stump, the ciliary body and anterior part of the choroid were found to be ossified; failed to find the piece of percussion cap. He is entirely relieved of pain, and the irritation of his right eye disappeared, with S = $\frac{20}{XX}$. He wears an artificial eye satisfactorily. In this case the ciliary nerves were undoubtedly the carriers of sympathetic irritation.

COROESPONDENCE.

The Committee on Organization of the Ninth International Congress, to be held in the United States in 1887, met in Washington, D. C., on November 29, 1884.

The following is a condensed report of the rules adopted: The Congress will be composed of members of the regular medical profession who shall have inscribed their names on the Register of the Congress and shall have taken out their tickets of admission.

The American members of the Congress shall be appointed by the American Medical Association, by regularly organized State and local medical societies, and also by such general organizations

relating to special departments and purposes, as the American Academy of Medicine, the American Surgical Association, the American Gynæcological, Ophthalmological, Otological, Laryngological, Neurological, and Dermatological Societies, and the American Public Health Association; each of the foregoing Societies being entitled to appoint one delegate for every ten of their membership.

All Societies entitled to representation are requested to elect their delegates at their last regular meeting preceding the meeting of the Congress, and to furnish the Secretary General with a certified list of the delegates so appointed.

The work of the Congress is divided into eighteen Sections, as follows, viz:

1, Medical Education, Legislation and Registration, including methods of teaching, and buildings, apparatus, etc., connected therewith; 2, Anatomy; 3, Physiology; 4, Pathology 5, Medicine; 6, Surgery; 7, Obstetrics; 8, Gynæcology; 9, Ophthalmology; 10, Otology; 11, Dermatology and Syphilis; 12, Nervous Diseases and Psychiatry; 13, Laryngology; 14, Public and International Hygiene; 14, Collective Investigation, Nomenclature, and Vital Statistics 16, Military and Naval Surgery and Medicine; 17, Experimental Therapeutics and Pharmacology; 18, Diseases of Children.

Notices of papers to be read in any one of the Sections, together with abstracts of the same, must be sent to the Secretary of that Section before April 30, 1887. These abstracts will be regarded as strictly confidential communications, and will not be published until the meeting of the Congress. Papers relating to questions not included in the list of subjects suggested by the Officers of the various Sections will be received. Any member, after April 30, wishing to bring forward a subject not upon the programme must give notice of his intention to the Secretary General at least twenty-one days before the opening of the Congress. The Officers of each Section shall decide as to the acceptance of any communication offered to their Section, and shall fix the time of its presentation. No communication will be received which has been already published, or read before a Society.

The officers elected are as follows:

President.—Dr. Austin Flint, Sr., of N. Y. Vice-Presidents.—Dr. Alfred Stillé, of Philadelphia; Dr. Henry I. Bowditch, of Boston; Dr. R. P. Howard, of Montreal, Canada. Secretary-General.—Dr. J. S. Billings, U. S. A. Treasurer.—Dr. J. M. Browne, U. S. Navy. Members of the Executive Committee (in addition to the President, Secretary-General, and Treasurer)—Dr. I. Minis Hays, of Philadelphia; Dr. A. Jacobi, New York; Dr. Christopher Johnston, of Baltimore; Dr. S. C Busey, of Washington

The Executive Committee will proceed at once to complete the work of organization.

J. S. Billings, Secretary-General.

Washington, D. C., Dec. 1, 1884.